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ABSTRACT

These three papers were presented at a symposium on rethinking diversity in human resource development (HRD) moderated by Neal Chalofsky at the 1996 conference of the Academy of Human Resource Development. "Diversity: A Double-Edged Sword" (Sally F. Angus) presents the notion of work force diversity through two differing perspectives in order to emphasize the serious and timely need for empirical study and science-based research upon which to base management decisions. "Career Development and Stress of Female Faculty Members at Pittsburg State University" (Chin-Fen Tsai, Robert C. Schwindt) describes a study that identified behaviors and stress factors at the different life stages of female faculty members at Pittsburg State University, Kansas. "The Relationship of Training and Team Diversity on the Productivity of Service Technicians at Bell South" (Anthony D. Machado, Douglas H. Smith), asks two questions: What impact does a total quality management training program have on productivity, and what variables differentiate the most productive work teams from the least productive work teams? Data from a study of 133 teams at Bell South revealed that total quality management training and its delivery coupled with the level of experience of the employee transcend the issues of a diverse work force. Papers contain references. (KC)

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SYMPOSIUM
[4] RETHINKING DIVERSITY

Chair: Neal Chalofsky, George Washington University

Diversity: A Double-Edged Sword
Sally F. Angus, Colorado State University

Career Development and Stress of Female Faculty Members at Pittsburg State University
Chin-Fen Tsai, Pittsburg State University
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The Relationship of Training and Team Diversity on the Productivity of Service Technicians at Bell South
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Diversity: A Double-Edged Sword

Sally F. Angus
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This opinion paper presents the politically correct notion of workforce diversity through two differing perspectives, stimulating more realistic thinking about its attendant issues. A cautionary examination of some of the dimensions of this popular trend are designed to lead one to recognize the serious and timely need for empirical study and science-based research upon which to base management decisions. In the absence of research, opinion guides, and diversity remains a potential manager's nightmare.

The following paper is not politically correct. As a matter of fact, one could read this piece and conclude that it is anti-diversity. Not so. The objective of this paper is to stimulate thinking about an issue that many nod their head to but in reality there is very little real commitment given. Part of the problem is that there is not a clear understanding of what it is to which this commitment is expected. For both academician and practitioner, agreement to a construct for diversity is a necessary first step.

Commitment to diversifying the workforce demands more than raising one's hand in a staff meeting and saying this is a good idea. Committing to diversification of the workforce requires thoughtful dedication to the concept, however nebulous it may be, as well as to the implementation. Without a good deal of both you may be in danger of opening the proverbial can of worms. *But how can managers be expected to commit to a concept that is propelling forward from its own popular inertia within a dearth of empirical support?*

Intuitively, diversity sounds good, particularly for today's organizations most of which are facing paradigm shifts to deal more effectively with a changing workforce (Johnston & Packer, 1987). In the midst of re-inventing and re-engineering, the idea of employees from differing cultures, ages, ethnic origins, and genders working collaboratively for the goals of the organization sounds attractive. But, diversity is not unlike a handwoven tapestry, depending on which side you're looking at, the threads form a very different picture. From one perspective, diversity in the workforce is a logical step for any organization dealing with change processes and transformation. The idea of diversity dangles like bait, offering itself as a potentially powerful source of synergism for creative problem-solving to organizations facing change. This positive view depicts diversity as capitalizing on work team member differences as a source of innovative and fresh perspectives—precisely what today's organization in transition needs.

The other side of the tapestry, however, reveals a different picture. Diverging from the cookie cutter-mold employee, workforce diversification can create a manager's nightmare. In other words, without diversity management, comprehensive and dynamic, diversity by itself can put the organization in jeopardy. Thus, a double-edged sword emerges—a dangerous metaphor for diversity: One edge is a necessary evolutionary step in organizational development; the other reveals diversity as a potential impediment to organizational development and progress.

Viewing diversity from two differing perspectives, as the sword metaphor offers, while not as politically comfortable as a unilateral view, is timely and necessary. This paper examines briefly some dimensions of diversity in organization transformation and some implications for further research. The intent here is not to play the devil's advocate, but rather to stimulate the need for further thinking about diversity, acknowledging the difficulty when research has been limited.

The Metaphor Changes

While a double-edged sword may be the metaphor of choice for this author, Americans have traditionally viewed diversity with emphasis on the assimilation of differences, i.e., the *melting pot* metaphor. Here, the ethnic and racial differences were pureed into a type of American standard.

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Realistically , this melting pot perspective of diversity is probably a myth—something most people would like to believe exists. More than just a metaphor at the workplace, this melting pot demanded voluntary conformity from employees in order for them to aspire to succeed (Thomas, 1990). Those days are over, according to Thomas, and he gives three reasons why the melting pot is not a good metaphor in business:

> First, if it ever was possible to melt down Scotsmen and Dutchmen and Frenchmen into an indistinguishable broth, you can't do the same with blacks, Asians, and women. Their differences don't melt so easily. Second, most people are no longer willing to be melted down, not even for eight hours a day -- and it's a seller's market for skills. Third, the thrust of today's nonhierarchial, flexible, collaborative management requires a ten- or twenty-fold increase in our tolerance for individuality (p. 108).

The realities faced today are no longer the realities that affirmative action, brought about by the 1964 Civil Rights Act, was designed to correct. It was initiated to fix prejudice. As social practice, not law, affirmative action played an essential getting-in-the-numbers role, helping to create the foundation necessary for diversification of the workforce. But affirmative action is an artificial, transitional intervention intended to give managers a chance to correct an imbalance, a mistake (Thomas, 1990). Diversification is not affirmative action. Diversification is evolutionary; affirmative action is reactionary. Affirmative action institutes a temporary imbalance, forced diversity, in order to reach a new balance (Gardenswartz & Rowe, 1993). Once the numbers are corrected, according to Thomas, affirmative action alone cannot cope with the remaining long-term task of creating a work setting geared to maximizing individual effectiveness and facilitating upward mobility of all kinds of people (1990). And, essentially, Thomas has hit on precisely what effective management of workforce diversity would seem to be about.

It has been eight years since the U. S. Department of Labor published its Workforce 2000 report exposing changes taking place in the economy and the composition of the workforce. It predicted the workforce slowly become more female, older, more disadvantaged with greater ethnic and racial diversity (Johnston & Packer, 1987). The implications to all of this change are legion. Needed will be new forms of leadership and management, greater knowledge of organizational culture and subcultures, negotiating skills, and stronger people skills.

Today, in many places, the predictions of the 2000 report are a reality. However, human resources experts estimate that only 3 percent to 5 percent of US corporations are diversifying their workforces *effectively* (Rice, 1994). This emerging reality has converged with the advent of many other changes impacting organizations at both the individual employee and organizational levels. Helgesen (1990) alleges, for example, that the hierarchial ladder is out; the shape of the new negotiating table is round, the team is the new star and empowerment is the name of the game.

One need but look around to realize that tomorrow's organizations will probably be flatter, leaner, and more aggressive. The current trend to simplify and tighten the organization will continue (Boyett & Conn, 1991). Organizations are realizing that the challenges of the nineties demand the fullest potential of their human resources that they can muster. In this regard, human resource managers are hampered by the almost complete absence of empirical research showing that diversity per se, represents an actual or potential competitive advantage in organizations. While the potential may exist for the diversification of the workforce to act as a double-edged sword, an *effectively managed* diverse workforce, nevertheless, continues to offer potential, a compelling promise of competitive advantage for organizations now and the next century. But, for some organizations to be able to see the long-term value of diversity, it may be necessary for them to shift paradigms, to go beyond *number changing* and into assessing their organizational *values*. It may be expensive. It may take a long time. It may make people uncomfortable.

The Kaleidoscopic Work Culture

Organizational culture is a network of assumptions, expectations and behaviors learned and shared over time (Sheinberg, 1994). Diversity in the workforce is essentially the organizational culture.

Important, but often overlooked, are the subcultures in an organization. A subculture is a set of values shared by a minority, usually a small minority of the organizations's members. Subcultures can weaken and undermine an organization if they are in conflict with the dominant culture or the overall objectives. Sheinberg (1994) describes an organization's culture as often illusive, very powerful, tangible, both overt and covert, durable, self-sustaining and defensive, and, along with the various sub-cultures, shaping everything that people in the organization think, behave, and believe to be true.

Research such as that by Hofstede (1983), identifying dimensions of culture, is useful when trying to understand organizational behavior and the potential ramifications of a diverse workforce. Power distancing, uncertainty avoidance, individualism, and masculinity/feminity are some of the basic dimensions that Hofstede found to differentiate cultures. Power distance is the extent to which less powerful members of organizations accept the unequal distribution of power. Individualism is the tendency to take care of oneself and one's immediate family versus collectivism characterized by a tight social framework in which people distinguish between their own group and other groups. Another dimension of cultural difference is uncertainty avoidance or the extent to which people feel threatened by ambiguous situations and the degree to which they try to avoid these situations. The fourth dimension identified by Hofstede is masculinity with its opposite pole, femininity. This dimension expresses the extent to which the dominant views within a culture emphasize assertiveness, money and things, not caring for others, quality of life and people.

Organizational culture evolves, changing through its own inertia, or by design. The process of changing culture is a long term effort that requires continual articulation, reinforcement and practice (Sheinberg, 1994). Designing a kaleidoscopic culture is important work since it is culture, according to Sheinberg, that creates meaning in any organization. Diversification of a workforce changes the culture. Therefore, it would seem that a continuous accommodation through an organizational systems approach must occur in order to facilitate diversity's inherent dynamics. This reality is part of the diversity sword's "other edge"; it can cut and do damage. Organizations need to approach diversity programs with caution, sincerity, and commitment; otherwise, the consequences of launching a diversity program can exacerbate problems, creating chasms and barriers too wide to cross.

Synergy as a Central Issue

To be most effective in complex endeavors, synergy is required; in organizations one must be able to collaborate not just with peers, but with technicians, and those from other specialities, organizations, and countries (Harris & Moran, 1991). This is the basis for the popular view of workforce diversity: *diversity equals positive synergy*. The term, synergy, reflects the equally popular notion that the "whole is greater than the sum of the parts." "The Third Wave Culture", the social revolution characterized by Toffler (1980), demands such collaboration. However, there is no empirical evidence to support the idea that diversity always equals positive synergy.

Harris and Moran (1993) analogize synergy as 2 + 2 = 5 instead of 4, but given various cross-cultural barriers such as age, gender, ethnicity, or religion, for example, cultural synergy may be the equation of 2 + 2 = 3. According to Harris and Moran, progress is made if the sum of cultural synergy is not negative. It doesn't have to be positive, simply not negative. A negative result of synergy implies barriers to progress, for example, obstacles to effective communication within the group, personality conflicts, or inability to reach consensus thus causing the group to be less productive/creative rather than more.

One study conducted at the University of California at Irvine and at the Stanford Business School showed white males becoming less attached and committed as the workplace became more diverse in terms of race and gender (Ritkin, 1994). Reports from various organizations indicate that heterogeneous work teams often greatly underperform homogeneous teams because heterogeneous teams lack the ability to recognize and understand the inherent differences of each member (Sheridan, 1994; Nicholas, 1994). More empirical research is needed on the impact of diversity on work teams/groups, particularly since teams are part of the new organizational look described throughout the literature—a look whose culture values creativity and innovation (Drucker, 1985).

The essence of synergy is to value differences, to respect them, to build on strengths, to compensate for weaknesses (Covey, 1994). There is no compromising in true synergy; nothing is given up either. Synergy emerges from the differences of the group members. What model works best for teams: Homogeneous or heterogeneous team membership? Compromise or true synergism? Conflict resolution or congruence of common values? Apparently, the jury is still out on teams.

In addition, some cultures are synergistic and their people inclined toward cooperation, but others are not, and their people seem to be often in conflict with one another (Harris & Moran, 1993). An interesting research effort might be to compare the characteristics of "high synergy" and "low synergy" societies to organizations or teams.

Approaching a Diversity Construct

Current approaches to diversity basically fall into three categories: 1) the ***traditional approach***, an affirmative action-increase-the-numbers model which assumes that a melting pot assimilation of differences will occur, 2) the ***understanding diversity approach***, a model which enhances employees' abilities to accept, understand, and appreciate differences among individuals, and 3) the ***managing for diversity approach***, an emerging model which combines some of the traditional approach with the kind of systems changes in the second model that effective diversity programs might require in order to be successful. According to one recently conducted rare, empirical study by Rynes and Rosen (1995), organizations that embrace a broader, more *holistic* definition of diversity are more inclined to see success regarding their diversity training initiatives.

The author views the third approach, *managing for diversity*, as the most promising. Such a view would see the objective of managing diversity as creating an environment that fully taps the potential of all individuals, in pursuit of organization objectives, without giving advantage or disadvantage to any person or group of persons (Thomas, 1990; Gardenswartz & Rowe, 1995). This approach comes closer to the more holistic definition recommended by Rynes and Rosen (1995).

Gardenswartz and Rowe (1993) see diversity as having distinct stages in its evolution within an organization: *affirmative action, valuing differences, and managing for diversity*, playing an integral part, overlapping both in philosophy and practice. They see these stages or diversity components as types of *openers*: affirmative action opens doors, valuing differences opens minds (changing attitudes, beliefs), and managing for diversity opens systems, affecting managerial policies and practices. They further suggest that each of these aspects of diversity may have a different driver: affirmative action driven by legal considerations, valuing differences in employees driven by ethical considerations, and managing for diversity being driven by organizational strategic plans and goals.

Promising or not, is such ideal diversity management realistic? Perhaps managing for diversity *is* a *process* rather than a solution, *enabling* rather than controlling, and perhaps it *is broad* in dimensions rather than limited to race, gender or ethnicity as suggested by Thomas (1990). But, such a diversity management approach *assumes* and *requires* that both organization and individual will do some adjusting. Managers proceeding forward with cultural and systemic interventions and initiatives at the individual and interpersonal levels, without the requisite research base and/or without the level of necessary commitment, may make costly decisions.

For example, strategic plans are often thought to be the solution for accommodating a diversifying workforce. However, what is really needed is strategic thinking, an on-going process not constrained by a static plan. Accommodating a diverse workforce requires planning, thinking, strategizing, and sensing, not just filling out forms and answering surveys. When data *is* collected, tying survey results back to specific corporate values, policies, and programs is crucial for long-term success (Baytos, 1992; Rynes & Rosen, 1995).

In diversifying a workforce, the human dynamics of social interaction are too complex to be adequately handled by any one model (Miller, 1994). For example, Sheinberg (1994) advocates the need for sensing and intuitively anticipating, playing "what might happen if?". This approach fits well with managing change processes. The work of Dinges and Maynard (1992) presents various comparative frameworks for use in the analysis of cultural differences within organizations. Adler (1980) provides one of the more thoughtful approaches to intercultural organizational behavior,

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focusing primarily on intercultural management tools.

Conclusion

Diversity as a construct, like leadership, remains elusive, increasing the difficulty of what is already a complex endeavor. Baytos (1992) warns that workforce diversity may be an area where even angels fear to tread. Diversity on any level and in any situation is not easy. The challenges represented by workforce diversity are complex and delicate. According to Baytos, the required change processes for an organization to successfully launch a workforce diversity program are labor intensive and costly. Quick fix approaches don't work. The evaluation of both personal attitudes and the organization's work culture are both necessary and risky "cans of worms". However, realistic, sensitive, planned and comprehensive workforce diversity initiatives presume to greatly benefit all employees.

This paper suggests several areas for further research. First, the concept of synergy needs to be studied particularly as it relates to various types of group dynamics, work group compositions, and teams. Second, research is needed for a more explicit construct definition of such terms as "diversity", "valuing diversity", and "managing for diversity". Third, further research is needed regarding specific types of work tasks and the working environment compared to types of individual workers, types of leadership or supervision, and/or types of collaborations required for getting the specific work accomplished. For example, is an effective diversity manager different from an effective manager in general? Fourth, greater research is needed in the area of diversity training and its evaluation, providing diversity trainers with more to offer organizations than awareness and sensitivity training. Also, research could address the causal relationship questions such as to what extent does training the workforce of an organization benefit that organization in terms of cost to benefits? Another area for future research might be to build on what is known of inter- and intra-cultural values with western culture models of supervision and communication.

It would seem that under diversity issues lay more profound issues relating to values. Further research is needed to develop a stronger link between workforce heterogeneity and various interventions and outcomes aimed at bringing about congruence.

Personal uniqueness, critical to identity and feelings of self-worth, requires nurturing and development in order for it to lead to growth. An organization is only as good as its employees. Thus, it would seem, that a program which develops and nurtures *all* of its employees becomes enhanced in the process. The bottom line—organizations need to know what they're getting into before embracing workforce diversity as any other bandwagon.

References

Baytos, L. M. (1992, March). Launching successful diversity initiatives. *HR* Magazine, 91-97.

Blank, R. & Slipp, S. (1994, September). The white male: an endangered species? Management Review, 27-32.

Boyd, M. (1994, January). Corporate cult -- or corporate culture? Incentive, 18-23.

Boyett, J. H., & Conn, H. P. (1991). Workplace 2000: the revolution reshaping American business. New York: Plume.

Cabrera, J. C. (1991). The managerial environment of the 1990s. The Small Business Controller, 4 (2), 14-18.

Gardenswartz, L., & Rowe, A. (1993). Managing diversity. New York: Business One Irwin/Pfeiffer.

Harris, P. R., & Moran, R. T. (1993). Managing cultural differences (3rd ed.). Houston, TX: Gulf Publishing Company.

Helgesen, S. (1990). The female advantage. New York: Doubleday.

Hofstede, G. (1983, Fall). The cultural relativity or organizational practices and theories. Journal of International Business Studies, 82-86.

Johnston, W. B., & Packer, A. H. (1987). Workforce 2000: work and workers for the twenty-first century. Indianapolis, IN: Hudson Institute.

Luthans, F. (1992). Organizational behavior. New York: McGraw-Hill.

Miller, E. K. (1994). Diversity and its management: training managers for cultural competence within the organization. Management Quarterly, 35 (2), 17-23.

Morrison, A. M. (1994). Building diversity. Executive Excellence, 11(10), 17-18.

Nicholas, J. M. (1994). Concurrent engineering: overcoming obstacles to teamwork. Production and Inventory Management Journal, 35 (3), 18-22.

Rice, F. (1994). How to make diversity pay. Fortune, 130 (3), 78-86.

Ritkin, G. (1994). Workplace diversity: the forgotten white male. Harvard Business Review, 72 (4), p. 8.

Rynes, S., & Rosen, B. (1995). A field survey of factors affecting the adoption and perceived success of diversity training. Personnel Psychology, 48, 247-270.

Sheinberg, S. (1994). Adhocracy and the new organizational architecture: the metamorphosis of work - part ii. Center for Life Cycles Sciences, 1, 2-21.

Sheridan, J. H. (1994). Dividends from diversity. Industry Week, 243 (17), 23-26.

Thomas, R. R. (1990, March-April). From affirmative action to affirming diversity. Harvard Business Review, 107-117.

Career Development and Stress of Female Faculty Members at Pittsburg State University

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Career development is important for today's working women because it can assist them in preparing for the future. The purpose of this study was to identify behaviors and stress factors at the different life stages of female faculty members at Pittsburg State University.

A career is important because it represents the person's work life setting and affects their quality of life. For women, having a career means being able to express their professional selves over their lifetime with a desire for just treatment and compensation for their efforts. Career development is very important for todays professional female staff member because this can assist them in preparing for the future.

Many women in professional jobs face pressure from the dual responsibilities of their jobs and family. This often will affect their stress level and their behaviors. This study attempted to relate aspects of stress to career stages of Pittsburg State University (PSU) female faculty members.

Problem Statement and Theoretical Framework

The Dalton Model with consideration for other scholars work, such as Arnold and Feldman, was used as the theoretical basis for this study. The "age-based" model suggest that individuals will be faced with different career tasks and psychological issues at different age-career stages. The individual in each stage must control their work activities and solve these psychological issues in order to develop new skills and grow professionally (Papalia and Olds, 228).

The Statement of the Problem for this study was:

> Women in professional jobs face pressures from dual responsibilities; their jobs and family. This may increase their stress level and affect their behaviors. This research is needed to identify career development and stress factors of PSU female faculty members.

The Research Questions Addressed in this study were:

1. How do career tasks differ during career development for different life stages?
2. How does stress differ during career development for the different life stages?
3. How do social characteristics differ in career development for the different life stages?

Methodology

This research was designed to acquire information about the career development of women faculty members at PSU. Descriptive research was chosen as the best method for addressing the problem and answering the research questions. The data was collected using a structured questionnaire developed by the researcher based on Dalton's two models; 1) Career Stages and Career Concerns and, 2) Life and Family Stages (Papalia and Olds, 228 & 518). The population consisted of both administrative and instructional staff members. Classified female staff members were not included. Eighty-three out of 125 questionnaires were returned for a 66.4 percent response. Thirty-five respondents were from administrative positions, with forty-eight respondents in instructional positions.

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Results

Thirty-nine percent of respondents were in the 31 - 40 age category, with another 30 percent in the 41-50 year category. Thirteen percent of the respondents were in the 20 - 30 and 51-60 year categories. Only 5 percent were 61 years of age or older.

Twenty-nine percent of the respondents had attained a doctoral degree with 43 percent, the highest percentage, completing the master degree. Only 18 percent had less than a master degree. Sixty-five percent of the respondents were married with only 16 percent having never been married. However, 34 percent had no children. Only 20 percent of respondents had more than two children.

Twenty-four percent (42) of the respondents indicated that job load was a major cause of stress, 21 percent(37) cited job demands, and 13 percent (23) indicated that finances were major causes of stress, as shown in Table 1. The greatest number of respondents indicated that job security was not a problem causing job stress. Pay inequity was cited as a major cause of stress by 18 (10 percent), and as a mild cause of stress by 33 (16 percent), but not as a problem by 27 (12 percent). Other causes of stress added by respondents included balancing family/job, time for scholarship, obtaining Ph.D., adolescent child, family member illness, no leisure/play time, and isolation.

Table 1. Causes of Stress

Causes	Major		Mild		Not a Cause	
	N	%	N	%	N	%
Financial	23	13	36	17	17	8
Job security	13	7	30	14	33	15
Job demand	37	21	30	14	12	7
Job load	42	24	26	13	9	4
Recent change	13	7	22	11	37	17
Pay inequity	18	10	33	16	27	12
Child care	9	5	12	6	57	26
Family demand on time	19	11	29	14	29	13

Note: totals exceed 100% due to multiple responses

A difference was found in the causes of stress related to age groups. In the 20-30 age group, 28 percent indicated that finance was the largest cause of stress, while in the 31-40 and 41-50 age groups job load was the largest cause of stress. More individuals in the 31-40 age group cited job security and pay inequity as a cause of stress than in any other age groups. Nearly 50 percent of all respondents disagreed or strongly disagreed that their chances job advancement were the same as it was for males.

Respondents were asked what they did to help relieve stress. Talking with others was cited most often (25 percent) followed by walking (22 percent), exercising (17 percent), and working (16 percent). Other responses added included socializing with friends, early to bed, watching TV, reading fiction, praying, travel, cooking, writing, doing artwork, gardening, homework, quiet time alone, and vacation. Respondents were also asked who helped them the most in handling stress. Their husband was given most often (41 percent) followed closely by friends (39 percent).

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Respondents were asked to estimate the amount of time they spent after work on other activities. The greatest amount of after work time was spent on house work followed by hobby or recreation. Only 29 respondents (35 percent) reported that they spent time after work on continuing education.

Forty-seven percent of respondents indicated that career development was not critical as their careers were well established, as shown in Table 2. However, 40 percent indicated that career development was essential and 10 percent indicated it was very important as their careers were in early stages. Respondents were asked about the clarity of their career plans. Results are shown in Table 3. Over 45 percent indicated they had only a broad idea of their career plans.

Table 2. Perception of Career Development Importance Related to Age

Importance	Age					
	Total	20-31	31-40	41-50	51-60	60+
Not critical, career well established	47	18	28	56	100	75
Essential, beginning career	40	55	38	20	0	0
Very important, thinking about career change	11	9	16	8	0	25
Very important, not sure of career plans	10	18	6	16	0	0
No response	5	0	13	0	0	0

Table 3. Clarity of Career Plans Related to Age

Clarity of Career Plans	Age					
	Total	20-31	31-40	41-50	51-60	60+
Not sure how to develop career	10	19	16	4	0	0
Have broad idea of career plans	47	55	47	56	36	0
Have definite future career plans	35	26	31	32	46	75
No response	7	0	6	8	9	25
Not applicable	1	0	0	0	9	0

Respondents were asked to check which of a list of career related task they were currently facing, as shown in Table 4. The most frequent task checked was reassessing my career abilities and interests, by 38 of 83 respondents. Obtaining an appropriate education, and reassessing their career abilities and interests were the most frequent task checked by respondents in the 20-31 age group. Reassessing career abilities and interests, being a mentor, and taking on managerial responsibilities were

the most often checked tasks by respondents in the 31-40 age group. Reassessing career abilities and interests and becoming an independent contributor to the organization were the most often checked tasks by respondents in the 41-50 age group. Reassessing career abilities and interests and becoming involved in civic and political arenas were the tasks most often checked by respondents in the 51-60 age group. Becoming an independent contributor to the organization was the career task most often checked by those older than 60.

Table 4. Career Task Related to Age

Career Tasks	Age					
	Total n=83	20-31 n=11	31-40 n=32	41-50 n=25	51-60 n=11	60+ n=4
Finding the right career	5	2	2	1	0	0
Obtain an appropriate education	13	4	4	5	0	0
Choosing a special area of competence	12	2	4	4	2	0
Becoming an independent contributor to org.	21	2	8	9	1	3
Reassessing career abilities and interests	38	4	16	14	4	0
Being a mentor	23	1	11	6	4	1
Taking on managerial responsibilities	20	2	10	6	2	0
Making strategic decisions	14	0	6	5	2	1
Becoming involved in civic/political arenas	20	0	9	6	4	1
Developing subordinates for leadership roles	12	0	5	5	2	0

Respondents were asked to indicate their level of agreement with a number of statements related to career development, as shown in Table 5. Seventy percent of all respondents either agreed or strongly agreed that they had a clear picture of what they wanted to do in the future. Only 24 percent agreed and 6 percent strongly agreed that they needed professional guidance for their careers. Forty-seven percent of respondents indicated that they had a strong desire to pursue additional education, whereas 25 percent disagreed or strongly disagreed with that statement and 15 percent were uncertain.

Respondents were asked if child care interfered with their career. Over 50 percent responded that this was not applicable. Of the remainder, 7 percent agreed and 7 percent strongly agreed, whereas 17 percent disagreed and 11 percent strongly disagreed with that statement. They were also asked if they had the same chance for advancement as a male with a similar job and experience. Thirty-five percent agreed with this statement, 12 percent were uncertain, and 49 percent disagreed.

Respondents were asked if their spouse or partner was supportive of their job. Only 2 percent disagreed with that statement. They were also asked if their spouse(partner) should assist more with the work at home. Over 40 percent agreed or strongly agreed with that statement, and only 22 percent disagree or strongly disagreed.

The statements related to career development were also analyzed related to the different age groups of the respondents. Respondents in the younger age groups expressed a stronger desire to

continue their education, and they also indicated a stronger level of agreement with the need for professional career guidance. Respondents in the older age groups indicated that they had a clearer picture of what they wanted to do in the future.

When analyzing the data according to the different age categories of this study, care had to be taken because of the relative low number of respondents in some age categories. There were only 4 respondents in the above 60 age category, 11 in the 20-31 age group, and 11 in the 51-60 age group. This was also taken into account in developing the following conclusions.

Table 5. Attitudes Toward Career Development

Statement	NA or No reply	SA	A	U	D	SD
Have strong desire to continue education	13	24	23	15	13	12
Clear what I want to do in the future	3	31	39	19	6	2
Need professional career guidance	12	6	24	12	27	19
Spouse(partner) supportive of my job	30	48	16	4	0	2
Spouse(partner) should assist more at home	33	17	24	4	12	10
Child care interferes with career	56	7	7	2	17	11
Have same chance for advancement as male	4	16	19	12	31	18

Conclusions

A greater proportion of the female faculty members were in the younger age groups. The greatest percentage of respondents were in the 31-40 age group. Only 29 percent of these individuals had obtained a doctoral degree. It would be interesting to see how these percentages compared with male faculty members in similar positions at the university.

Although only 16 percent of respondents had never been married, 34 percent had no children. Even considering the low number of respondents in the 20 - 30 age group, this may indicate that a number of female faculty members do not have children, or delay having children until an older age. Of those having children, the family size tends to be small, which may again indicate that child bearing is delayed for female faculty members. Child care assistance may be beneficial to some faculty members as nearly 15 percent of respondents agreed or strongly agreed that child care interfered with their careers.

The greatest percentage of respondents strongly agreed that their spouse(partner) was supportive of their job, which should help lessen stress. However, they also agreed that their spouse(partner) needed to help more with the work in the home, which may be a cause of stress.

The administration of Pittsburg State University should address the stressors of the female faculty members. The greatest causes of job stress were job load and job demand. Pay inequity and job security was not often reported as a cause of stress. However, it was reported frequently enough, especially by younger faculty members, that these two issues do demand attention.

More specific negative effects of heavy job loads and job demands were confirmed by the number of respondents who reported that they did not have adequate time to participate in professional or social organizations, for hobbies and recreational activities, or to spend time with friends. A lack of

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time for these three major factors in their lives will continue to create additional and perhaps unneeded stress, unless efforts are made to reduce heavy loads and job demands.

Exercise has been reported as effective in helping to reduce the stress levels of individuals in other studies. A number of respondents reported that they did use exercise and walking as ways they reduced their stress. However, this was reported by less than 30 percent of respondents, while only 27 percent indicated that they exercised daily and another 25 percent exercised only twice a day. Efforts to involve the female faculty members in activities promoted by the University involving exercise should be helpful.

All age groups of respondents indicated that reassessing their career abilities and interests was a career task that they were currently facing. Respondents in the younger age groups were move involved in finding the right career, and obtaining an appropriate education, while those in older age groups were more involved in making strategic decisions, becoming an independent contributor to the organization, and in being a mentor.

Career development assistance would be of benefit to the female faculty members of Pittsburg State University. However, as would be expected, respondents in older age groups felt that career development was not as important. Career guidance as well as assistance in professional development should be provided, as reflected by the relatively low number of respondents who had doctorate level degrees.

Encouragement is needed for female faculty members to participate in professional organizations. This is especially important for younger faculty members who more often agreed that they did not have adequate time to participate in their professional organizations.

The physiological issues most often facing the female faculty members at Pittsburg State University correlated very closely with those in the Life and Family Stages Model presented in the 1987 Annual: Developing Human Resources. Developing a self-identify and balancing one's own needs with those of others was often confirmed as a issue for younger individuals, while reassessing current values and commitments was most often reported during the middle-life transition life stage. Older faculty members reported that a major issue was the development of new hobbies, activities, and friendships.

References

Adler, N. J. (1994, April). Women managers in a global economy. *Training and Development Journal, 48*, 30-36.

Advancing women in the workplace. (1993, September.) *Training and Development Journal, 47*, 9-10.

Allerton, H. (1992, August). Women and work. *Training and Development Journal, 46*, 87.

Bamford, J. (1994). America's the top women working women business fifty owners. *Working Women*, 39.

Collins, R. & Magid, R. Y. (1990, July). Work and family: How managers can make a difference. *Personnel Journal*, 14-15.

Dalton, G. W., Thompson, P. H., and Price, R. L. (1977). The four stages of professional careers: A new look at performance by professionals. *Organizational Dynamics, 6*, 19-42.

Feldman, D. C. (1987). Career states and life stages: A career-development perspective. *The 1987 Annual: Developing Human Resources*. University Associates, Inc., 225-234.

Koonce, R. (1995, January). Becoming your own career coach. *Training and Development Journal, 49*, 18-25.

Papalia, D. F. and Olds, S. W. (1986). *Human Development*. New York: McGraw-Hill.

Santrock, J. W. (1989). *Life-span development*. Dubuque, IA: Wm. C. Brown.

Women don't have bad attitudes, just bad paychecks. (1994, October). *Training, 31*, 16-17.

Zunke, V. G. (1990). *Career counseling-applied concepts of life planning*. Wadsworth, Inc., 27, 380-381.

The Relationship of Training and Team Diversity on the Productivity of Service Technicians at Bell South

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This study asks two questions: What impact does a total quality management training program have on productivity, what variables differentiate the most productive work teams from the least productive work teams? A total of 133 teams, encompassing 1,780 employees from Bell South, took part in the study. The data revealed that total quality management training and its delivery coupled with the level of experience of the employee transcend the issues of a diverse American workforce.

The increasing diversity of the American workforce coupled with the rapid technological advances taking place today, particularly in the telecommunications industry, have forced many American companies to look for alternative methods to manage their business more effectively and increase productivity. The implementation of total quality management programs has become one such alternative method. This represents a new approach to organizational design and the work ethic. Some view the total quality management process as both a social revolution in the workplace and a rigorously effective approach to organizational success (Hutchins, 1992; Peters & Austin, 1985).

The task of developing effective work teams, one primary key to total quality management, is easily achieved by a homogeneous society such as Japan's (Dietrich, 1991; Okawara, 1990). Yet, in order to achieve similar results in the United States, several issues involving the diversity of the American workforce must be addressed. Such issues as race, age, and gender, as well as work experience and training concerns brought about by the changing composition of this workforce, may impede the implementation of total quality management programs in the United States. It is this issue of diversity in work groups, therefore, that has emerged as one of the most discussed issues in the workplace in America today. As D'Souza (1991, p. 58) points out, "the United States is rapidly becoming a multiracial, multicultural society in a way that it has not been before. Immigration from Asia, Latin America, and the Caribbean has populated the landscape with an array of yellow, brown, and black faces."

Some analysts, however, consider that this concern for the diverse workforce, and the thrust to increase productivity through improved quality, is more the result of a reactive need to produce quality goods at a competitive cost rather than a proactive desire to improve business and human conditions. The result may be, in many cases, hastily prepared training programs on total quality management that neither serves the intended purpose nor provides the results sought. The total quality management programs may not be administered in a manner that achieves the highest payoff for the training dollars spent.

In sum, these two issues: the impact on productivity of a total quality management training program, and the team characteristics of a diverse American workforce, collectively identify the focus of this study.

The Problem

Bell South, a regional telecommunications company operating in the southeastern United States (known as Southern Bell until 1995), has a strong philosophical and organizational commitment to continually improve the quality of its products and services. Recent advances in telecommunications technology now provide business customers with the option to bypass the local telephone network. This decision will soon be also available to residential customers. The importance of maintaining satisfied customers becomes a critical issue in order to prevent an eroding customer base. Total quality management (TQM), a process emphasizing teamwork, has been implemented through a company-wide training program to achieve this goal.

The key, however, may lie in the ability of diverse work teams to achieve a common goal that will benefit the organization. Whites will remain the major labor force in the United States through the Year

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2000. Yet, their absolute numbers will increase only 15%, compared with a 20% increase for blacks and a 74% increase for Hispanics. These facts, coupled with heavy immigration, will make the Hispanic growth rate faster than that of any other race or ethnic group in this country.

One of the most striking changes in the labor force in the United States during the 1990's will be the increase in the number of women employed full time. Duster and Nasatir (1990, p. 19), addressing the issue of gender point to, "the feminization of the workplace that has occurred during the past decade [and how] women are likely to account for more than 60% of the growth in the labor force during the next ten years." This trend should lead America into the new millennium with a workforce of equal proportions of male and female workers, particularly in the white-collar professions (Fernández, 1991; Hamada, 1990; Hopkins, Nestleroth, & Bolick, 1991; Kovach, 1992; Naisbitt & Aburdene, 1990).

The importance of the issue of age in the American workforce cannot be overstated. By the end of the century, as Hopkins, Nestleroth, and Bolick (1991, p. 19) point out, "while the 20 to 29 year-old group will shrink by 17 percent, the number of people aged 35 to 47 will climb by 38 percent and the number between the ages of 48 and 53 will jump by 67 percent."

Furthermore, the diversity of the American population, and consequently of the American workforce, in terms of race, age, and gender, coupled with its individualistic approach to business, may impede the successful implementation of total quality management programs involving teamwork. The telecommunications industry, like most large corporations which generally resemble the make-up of the community they serve, is especially affected by this diversity.

This study examines the impact of this diverse milieu upon the effectiveness (productivity) of work teams, an important element to total quality management implementation in organizations. It also examines the impact of TQM training, and the scheduling of this training on the productivity of work teams.

Research Questions

This study provided specific knowledge of worker productivity based on data from a representative sample of employee work teams (Service Technicians), from a single telecommunications company that provided the same TQM training program for all the teams. Two basic research questions were investigated: What are the major factors which impact productivity of Service Technicians as it relates to their ability to meet customer service requirements? More specifically, what are the variables that differentiate the most productive work teams from the least productive work teams?

The variables investigated in this study are five work team diversity characteristics (race, gender, age, years of experience as service technicians, and years with Bell South), and two training variables (attendance in a TQM training program, and the proximity of training completion by individual team members). These variables were assessed as to their impact upon the productivity (service order completion) of the service technicians.

Most research of work related issues is conducted within an area or region using data gathered from several different companies and industries (Hull, Friedman, & Rogers, 1982; Kalleberg & Leicht, 1986; Kalleberg, Lincoln, Hanada, & McBride, 1990), instead of making specific determinations about one company within one industry. Other studies have combined national samples of firms in a given industry (Kelley, 1990), not taking into account that training packages used in different companies may vary greatly. Still other studies which research productivity results have relied solely on the qualitative approach, seeking to discover the work relations of individuals within particular organizations and corporations (Kelley, 1990). Many major American companies now embrace some form of total quality management (Lawler, Mohrman, & Ledford, 1992) yet the amount of research to determine specifically which practices most directly impact productivity is scarce (Colclough & Tolbert, 1992; Kahnweiler, 1991; Lawler, Mohrman, & Ledford, 1992). This study will, however, provide specific knowledge of worker productivity based on data collected from a representative sample of employee work teams, performing both at the top ten percent and at the bottom ten percent in productivity, from a single telecommunications company and provided the same total quality management training program which will be ultimately required by all employees.

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Methodology

Pilot Study A pilot study was conducted to assess the feasibility of the proposed research. Seventeen work teams from Dade County, Florida, were identified involving a total of 231 workers. Data were collected on the demographic composition of the work teams, including race, gender, age, and productivity results of these teams for two years, 1992 and 1993. This information served to create a productivity scale to rank the teams from the most productive teams to the least productive teams. Additionally, the attendance date of each individual to the TQM training, *The Quality Advantage*, was recorded.

From the pilot study it was determined that variables regarding team composition, such as years of work experience as service technicians, and years with the company, were important variables. The decision to include these additional variables enhanced the investigation, and allowed a more accurate prediction of which variables may have the greatest impact on the differences in productivity results of the work teams.

Population and Sample The total population of this study represents the service technicians of Bell South. This group of employees was selected as it encompasses one of the largest group of employees, and ensures the ability to utilize the specific productivity results of one job classification. This served to provide a level of clarity without contaminating the findings with extraneous variables such as differing job classifications, work responsibilities, and difficulty of tasks. Additionally, it eliminated the question of group size as a possible variable, since the work teams are evenly apportioned in size, between 12 and 16 team members, a range normally considered as a small group (Hogg, 1992; Katzenbach & Smith, 1993).

All service technicians are required to meet the same minimum technical training guidelines to gain entry into, and retain, this job. Their jobs involve complex technical skills, and at times may require multiple team member participation to complete a required task. The teams are given the flexibility to call on other team members to help in the completion of assigned tasks. This work flexibility, therefore, also makes this type of job classification very attractive for a study of the productivity of teams.

A total of 679 teams, comprising approximately 9,500 employees, were identified for the job classification of Service Technicians throughout Southern Bell. This study analyzed the impact of the selected variables on productivity by comparing the collective results of those teams in the upper ten percent with those in the lowest ten percent of the population. Of the 136 teams selected, three teams, one from the top ten percent and two from the bottom ten percent, were discarded, as they included classifications other than service technicians. Thus, 133 teams (1,780 service technicians) were subjected to the analysis, 67 from the top ten percent and 66 from the bottom ten percent. Table 1 shows the demographic characteristics of the selected teams including the standard deviation and *t* test results for the significant variables (age, time on job, and years with company).

The study is causal-comparative, as it examines the effect of the selected variables, on productivity, without the ability of the researcher to manipulate any of the variables. Furthermore, this type of research does not allow for the random assignment of subjects to groups formed by combinations of the variables (Gay, 1992). Since the study seeks to identify the variables that best differentiate the most productive teams from the least productive teams of Service Technicians in Bell South, *t*-tests were conducted to confirm significant mean differences (see Table 1). To facilitate the prediction of effective work teams, a discriminant analysis procedure was also performed, to analyze the variables selected together, and not one at a time, to predict productivity based on the statistical ranking of the variables. The true potential of discriminant analysis is shown in a multigroup situation where the relevant question is one of statistically significant differences among criterion groups considered simultaneously (Bibb & Roncek, 1976).

Data Collection

The required data of work team characteristics were gathered in 1994, utilizing personnel records and company published results for all selected work teams. The data obtained from personnel files for the demographic variables of the selected work team members were kept confidential, and was only used to draw general conclusions based on these variables and their impact on productivity results. To ensure the privacy of records, the selected employees were identified by a random numerical entry in a group composition work sheet. Their names, or other methods of identification, were never recorded.

Table 1. Means, Frequencies, and Percentages of Demographic Characteristics of Selected Teams, and Standard Deviations and *t* test Results for Age, Time on Job, and Years with Company

	Top 10% Teams				Bottom 10% Teams			
Variable	Mean	Freq.	(%)	SD	Mean	Freq.	(%)	SD
Race								
White	.743	651	74%		.435	391	44%	
Black	.149	131	15%		.494	447	49%	
Hispanic	.108	95	11%		.072	65	7%	
Gender								
Men	.769	674	77%		.758	684	76%	
Women	.232	203	23%		.243	219	24%	
Age	41.70	877	100%	9.59[1]	32.33	903	100%	9.49[1]
Years on job	12.67			8.13[2]	5.91			6.38[2]
Years with company	18.90			9.13[3]	10.51			8.40[3]

[1] $t = -20.71$ $df = 1778$ P value = .00
[2] $t = -19.58$ $df = 1778$ P value = .00
[3] $t = -20.19$ $df = 1778$ P value = .00

To arrive at productivity results for the service technicians, the company relies on the service order completion date. This process is automatically entered in the computers when the customer agrees that the service provided meets their expectations. The computer stamps the date and time of the completion and this information cannot be altered in the future. Subsequently, a supervisory program is printed providing the analysis used as the basis for this study. The results published are accurate indicators of performance for each of the teams studied, particularly as they are subject to scrutiny by the public and these regulating government agencies. They are, therefore, considered reliable indicators of productivity.

The data on productivity results were collected for 1991, the year prior to the introduction of the TQM training *(The Quality Advantage)*. The 1991 productivity data were the baseline measures upon which valid determination of the value of the quality training could be made. Productivity data were collected for 1992, the year when TQM training was first introduced to the Service Technicians, and for 1993, after most team members had attended the course.

Analysis of the Data

The data were analyzed to determine the individual and collective impact of the work team characteristics, and training variables on the productivity of the service technicians. As recommended by Norusis (1990) univariate analyses (Alpha = .05) were conducted for all variables except two. The variables 'Race' and 'Gender' are nominal data; consequently, these variables were not subjected to a *t*-test analysis and *t*-test analysis requires interval or ratio data. All variables were included in the final discriminant analysis procedure that will eventually help in determining the significance of their contribution to the impact on productivity results. The analysis of each of the variables will now be presented.

Race The variable 'Race' had been subdivided into three categories and codes, White (1), Black (2), and Hispanic (3). The top ten percent teams had a lower mean score (1.37) indicating that the team composition was somewhat more uniform. In contrast, the higher mean score recorded for the bottom ten percent teams (1.64) indicates that greater employee diversity existed in their team composition. The findings are not significant except to show that the ethnic composition is reflective of the decline in White, non-Hispanic individuals, and the increase in minorities in the American workforce. This can be seen by the increase in these minority groups in the younger, less experienced employees, indicating hiring trends

which are reflective of the population shifts.

Gender There was no significant difference between men and women, coded 1 and 2 respectively. The mean rates for the top ten percent teams and the bottom ten percent teams did not differ significantly (Top mean = 1.23 versus Bottom mean = 1.24). This indicates that men and women do not differ with respect to their performance and productivity results.

Age The question of the impact of age is a vital consideration when exploring productivity improvements. Specifically, Table 1 presents breakdowns of the teams by age and includes means and standard deviations, as well as *t*-test results for this category. As shown, those at the top ten percent were significantly older (Top mean = 41.70). In contrast, the employees at the bottom ten percent were much younger (Bottom mean = 32.33), possibly indicating limited work experience and service with the company. The results of the *t*-test conducted for this variable support this finding (*t* value 20.71 and a significance P of .00). The difference was so great that, in terms of average age, as it relates to years of experience, the employees from the top ten percent teams had an average of almost ten years more that those in the bottom ten percent teams. It is also important to note that while those at the bottom of the scale are much younger, this correlates with the national trend in America as it relates to minorities.

Years Experience as Service Technicians The significant differences in mean scores service technician experience (Top mean = 12.67 years, versus Bottom mean = 5.91 years) suggest that the ability to perform tasks more expeditiously is enhanced by having continually performed these tasks for extended periods of time. The results of the standard deviation for this variable (Top SD = 8.13 versus Bottom SD = 6.38) show the most experienced employees within this category having a substantial greater number of years on the job, particularly when considering the mean for the top teams is 12.67 years of experience on the present job (see Table 1). In contrast, those employees in the bottom ten percent, and who are at the top of the spectrum in this category, do not have an accrued number of years matching even the mean of those employees at the top ten percent. The results of the *t*-test also support this conclusion (*t* value 19.58 and a significance P of .00).

Years of Company Experience As with 'Time on job', the means (Top mean = 18.90 versus Bottom mean = 10.51) shown in table 10 imply that experience gained through service with the company is a strong benefit to improved productivity. Furthermore, the standard deviation scores shown (Top SD = 9.13 versus Bottom SD = 8.40) confirm that the spread in years of experience is consistent with the group norms (see Table 1). That is, the teams from the top ten percent have many more years of service, even for those with the least seniority. In contrast, those at the bottom ten percent have little service with the company, and those with the most seniority within this category do not have significantly more years of service than the norm for this variable by the top ten percent teams. The results of the *t*-test conducted for this variable support the earlier findings (*t* value 20.19 and a significance P of .00).

It should be noted that the mean age of the top ten percent teams (mean = 41.70), as seen in Table 1, is greater than the mean age (mean = 32.33) for the bottom ten percent teams. When analyzed with the variables ' Time on Job', and 'Years with Company' a positive correlation occurs (Time on Job: r = .93, df = 1778; Years with Company: r = .65, df = 1778). In other words, as one variable increases the next one increases proportionately.

Training Attendance Table 2 presents the annual productivity results from 1991, the baseline year when TQM training had not yet been offered to service technicians, 1992 when the training was initiated toward the end of the year, and 1993 when most of the training had been conducted. Both the top ten percent and bottom ten percent teams showed little improvement between the 1991 and 1992 . However, when the 1993 results are considered, the change is noticeable for both groups. The results for the top ten percent teams (1992 mean = 94.90 versus 1993 mean = 98.18) was substantial. Likewise, those teams at the bottom ten percent also recorded an appreciable difference (Bottom 1992 mean = 86.41 versus Bottom 1993 mean = 88.27).

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Table 2
Means and Standard Deviations for Productivity Results By Year for Top Ten Percent and Bottom Ten Percent Teams

	Top ten percent teams (n = 67)		Bottom ten percent (n = 66)	
Variable	Mean	*SD*	Mean	*SD*
1991 Results	94.55	3.30	86.59	3.48
1992 Results	94.90	3.36	86.41	3.42
1993 Results	98.18	1.01	88.27	2.89

The standard deviations in Table 2 are particularly meaningful, especially when comparing the 1992 results to the 1993 results. The standard deviation from the top ten percent teams (SD = 1.01) shows that most teams in this category were relatively close together, and at a very high score (mean = 98.17). This indicates that the impact of the total quality management training was positive. These data emphasize the value of the total quality management training per se, regardless of team membership at the top or bottom of the productivity scale.

Training Proximity. Table 3 presents the proximity of training for team members, and the difference in year-end productivity results from 1992 to 1993. The 'Training proximity' mean is relative to the equivalent month and year that the team members attended the training. A numerical value was assigned that corresponded to the month and year of attendance to the program. The coding values selected ranged from one to thirty with one corresponds to the baseline month (January, 1992) when the training program was first offered to Service Technicians, 30 (June, 1994) which is the last month when data were collected. This score of 30 was assigned to all employees whose records indicated that they had not yet attended the total quality management training program. The decision was sound, considering the company's commitment to send all employees to this training program. Most teams reported completing this program by the second quarter of 1994.

Table 3
Means and Standard Deviations on Training Variable 'Training Proximity' by Performance Result Differences from 1992 to 1993[1]

	Training proximity		Change in % points
Groups	Mean[2]	*SD*	Mean[3]
Top ten percent teams	13.13	5.87	3.29
Bottom ten percent teams	17.83	8.39	1.85

[1] The change in percentage points documented from the 1991 to 1992 results was essentially nil and were not included in this table.
[2]Represents the attendance month mean for training proximity
[3]Represents the change in percentage points in productivity from 1992 to 1993 year-end results.

The mean scores (Top mean = 13.13 versus Bottom mean = 17.83) indicate that the team members at the top started to take advantage of the total quality management training program much sooner, once it was offered, than the team members at the bottom. Also, the standard deviation result for the top ten percent teams is smaller (SD = 5.87), with a value closer to zero than that achieved by the bottom ten percent teams (SD = 8.39). These data indicate that the members of the top teams attended the total quality management training at much closer intervals of each other.

These data also indicate that, although there is usually more room for the worst teams to advance in the productivity scale, those at the top ten percent more consistently benefited from the program. In fact, the increase in productivity by the teams in the top ten percent was almost twice as much as the increase

recorded by those teams in the bottom ten percent category. Thus, proximity of attendance to the total quality management training program, to a noticeable degree, alters the outcome of the training process, especially for the most productive teams.

Relationship to the Research Question

The focus of this study was to determine which variables were responsible for the greatest impact on productivity results. This was determined through the test Canonical Discriminant Function Coefficient. The Canonical Correlation is a measure of the degree of association between the discriminant scores and the groups. It is equivalent to eta from the one-way analysis of variance, that is, the ratio of the between-groups sum of squares to the total sum of squares and thus represents the proportion of the total variance attributable to differences among the groups. (Norusis, M. J., 1990). The cut-off value for the correlation coefficients, denoting the significance of the variables, is considered to be .50. This decision is supported by the fact that the discriminant function is based on prior probability of 0.50, and helps eliminate the need for any discussion of such extraneous variables.

As shown in Table 4, the structure coefficients between the predictor variables and the discriminant function suggest that the primary variables in distinguishing between teams at the top ten percent and teams at the bottom ten percent were, 'Age', 'Years with Company', 'Time on Job', and 'Training Proximity.' In other words, as shown, 'Age' has the highest correlation with the discriminant function (.804). 'Service' and 'Time on job' have the next largest correlations (.788 and .760 respectively), in absolute value. The negative signs are irrelevant as they only indicate that small function values are associated with those particular variables ('Race' and 'Gender'). The standardized coefficient values listed in Table 4 are measures of the magnitude of each variable's contribution to the equation (Weiss, 1976).

Table 4
Pooled-Within-Groups Correlations Between Discriminating Variables and Canonical Discriminant Function

Predictor Variable	Correlation within Function
Age	.804
Service	.788
Time on job	.760
Training	.530
Location	.438
Race	-.348
Gender	-.021

Note. Variables shown by size of correlation within function.

Conclusions

The results of this study identified several important issues, as well as their relationship and impact on productivity. Age was found to be the variable that most successfully differentiated between the teams at the top ten percent in productivity results and the teams at the bottom ten percent in productivity results. It was also determined that this variable, 'Age' had a positive correlation with the variables 'Time on Job', and 'Years with Company.' Additionally, years of experience on the present job, as well as total years of service with the company, appeared to have statistically significant relationships with the high levels of performance recorded by work groups in the top ten percent category. These were older workers and consequently, generally had been on the job longer. This finding, while clearly understandable, was not expected to be such a controlling factor.

Another significant difference was found to be the training variable dealing with scheduling controls.

It appears that the closer the individual team members attend the total quality management training as a team, the greater the results gained by the work group. That is, the teams who attended their training together, or within two months of each other are the teams identified as the most successful teams in terms of productivity achievements. Conversely, the further apart the training scheduling takes place, the less of an impact the training has on the productivity of the work team.

The findings from the discriminant analysis function suggest that team members at the top ten percent in productivity results can be reliably distinguished by a linear combination of the training proximity variable and three demographic team characteristics ('Age', 'Time on job', and 'Years with Company'). Those employees who comprise the top ten percent teams were much older, had much more time on the present job (service technicians), and much more service with the company, hence more experience to do the job faster and more efficiently. The team members at the top ten percent, however, were not significantly distinct from team members at the bottom ten percent on such factors as race and gender, the other demographic team characteristics analyzed in this study.

References

Colclough, G., & Tolbert II, C. M. (1992). Work in the fast lane: Flexibility, divisions of labor and inequality in high-tech industries. Albany, NY: SUNNY Press.

D'Souza, D. (1991, March). Illiberal education, Atlantic Monthly, (p.58).

Dietrich, W. S. (1991). In the shadow of the rising sun - The political roots of American economic decline. University Park, PA: The Pennsylvania State University Press.

Duster, T., & Nasatir, D. (1990). California as the future of the labor market: Workplace diversity - Barrier or opportunity? In M. London et al (Eds.) Human resource forecasting and strategy development - Guidelines for analyzing and fulfilling organizational needs (pp.). New York: Quorum Books.

Fernández, J. P. (1991). Managing a diverse workforce. Lexington, MA: Lexington Books.

Gay, L. R. (1992). Educational research - Competencies for analysis and application (fourth edition). New York: McMillan Publishing Company.

Hamada, T. (1990). Cultural dynamics, gender, and meaning of task in a Japanese high tech firm in the U.S. In V. H. Sultive, N. Altshuler, M. D. Zamora, & V. Kerns (Eds.), Cross-cultural management and organizational culture (pp.). Williamsburg, VA: College of William and Mary Press.

Hogg, M. A. (1992). The social psychology of group cohesiveness. Washington Square, New York: University Press.

Hopkins, K. R., Nestleroth, S. L., & Bolick, C. (1991). Help wanted - How companies can survive and thrive in the coming worker shortage. New York: McGraw Hill, Inc.

Hull, F., Friedman, N. S., & Rogers, T. (1982, February). The effect of technology on alienation from work: Testing Blauner's inverted U-curve hypothesis. Work and occupations. (9) 1, .

Hutchins, D. (1992). Achieve total quality. Cambridge, England: Director Books.

Hopkins, K. R., Nestleroth, S. L., & Bolick, C. (1991). Help wanted - How companies can survive and thrive in the coming worker shortage. New York: McGraw Hill, Inc.

Kahnweiler, W. M. (1991). A review of the participatory management literature: Implications for HRD research and practice. Human Resource Development Quarterly. (2) 3, 229-250.

Kalleberg, A. L., & Leicht, K. (1986). Jobs and skills: A multivariate structural approach. Social Science Journal. (15), 269-296.

Kalleberg, A. L., Lincoln, J. R., Hanada, M., & McBride, K. (1990). Culture, control, and commitment. New York: Cambridge University Press.

Katzenbach, J. R., & Smith, D. K. (1993, March-April). The discipline of teams. Harvard Business Review. (71) 2, 111-120.

Kelley, M. (1990, April). New process technology, job design and work organization: A contingency model. American Sociological Review. (55) 2, 191-208.

Kovach, K. (1992). Human resource management: A Diagnostic Approach. New York: University Press of America.

Lawler, E. E. III, Mohrman, S. A., & Ledford, G. E. (1992). Employee involvement in America: An assessment of practices and results. San Francisco, CA: Jossey-Bass.

Naisbitt, J., & Aburdene, P. (1990). Megatrends 2000 - Ten new directions for the 1990's. New York: William Morrow and Company, Inc.

Norusis, M. N. (1991). SPSS/PC+ studentware plus. Chicago, IL: SPSS International BV.

Okawara, Y. (1990). To avoid isolation: An ambassador's view of U.S./ Japanese relations. Columbia, SC: University of South Carolina Press.

Peters, T., & Austin, N. (1985). A passion for excellence. New York: Random House Publishers.

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